

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

4A28
Revision 8
BOEING
720
720B

May 1, 1973

TYPE CERTIFICATE DATA SHEET NO.4A28

This data sheet which is a part of type certificate No. 4A28 prescribes conditions and limitations under which the product for which the type certificate was issued meets the airworthiness requirements of the Civil Air Regulations.

Type Certificate Holder The Boeing Company
P.O. Box 3707
Seattle, Washington 98124

I - 720 Series (Transport Aircraft), approved June 30, 1960

The 720 Series airplane has several different models due to different installations of equipment, interiors, airplane flight manuals, etc. These models are as follows:

<u>Model</u>	<u>Serial numbers Eligible</u>		
720-022	17907 thru 17917; 18044 thru 18050; 18072 thru 18082		
720-025	18155 thru 18164; 18240 thru 18244		
720-027	18064 thru 18066; 18154; 18423 and 18581		
720-048	18041 thru 18043		
720-062	18376 and 18377		
Engines	4 Pratt and Whitney Turbojet JT3C-7, except Model 720-025, which has 4 Pratt and Whitney JT3C-12 engines.		
Fuel	See NOTE 10		
Engine limits	<u>CERTIFICATION LIMITS</u>		
Thrust Ratings (pounds)		<u>JT3C-7</u>	<u>JT3C-12</u>
	Takeoff (standard day) static		
	Sea Level (5 minutes)	12,000	13,000
	Below 43.5°F. Compressor inlet temperature (5 minutes)	12,500	---
	Maximum continuous, static, sea level	10,000	11,500
	At 4°F. ambient temperature and below	12,000	---
	At 25°F. ambient temperature and below	---	13,000
	Maximum permissible engine rotor operating speeds:		
	Low pressure compressor (N ₁) rpm	6850 (110.7%)	6850 (110.7%)
	High pressure compressor (N ₂) rpm	9950 (99.7%)	10150 (101.7%)
	Thrust setting -- Appropriate thrust setting curve (EPR), in the Airplane Flight Manual must be used for control of engine thrust.		

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Maximum permissible turbine outlet gas temperatures:

Takeoff (5 minutes)	(620°C) 1148°F	(665°C) 1229°F
Maximum continuous	(540°C) 1004°F	(600°C) 1112°F
Maximum for acceleration (2 minutes)	(650°C) 1202°F	(695°C) 1283°F
Starting (Ground)	(450°C) 842°F	(450°C) 842°F
(Air)	(500°C) 932°F	(500°C) 932°F

Maximum oil inlet temperature

Continuous Operation	(121°C) 250°F	(121°C) 250°F
10 minutes ground operation only	---	(143°C) 290°F

Airspeed limits
(IAS)V_{mo} (Normal Operating) (Basic)

At Sea Level	436 mph	(378 knots)
At 6,000 feet	439 mph	(381 knots)
At 10,000 feet	442 mph	(384 knots)
At 23,400 feet	460 mph	(399 knots)

M_{mo} = 0.906 at 23,400 feet and aboveV_{mo} (Normal Operating) (Alternate) (See NOTE 5)

At Sea Level	394 mph	(342 knots)
At 5,000 feet	397 mph	(344 knots)
At 10,000 feet	400 mph	(347 knots)
At 15,000 feet	404 mph	(350 knots)
At 20,000 feet	407 mph	(354 knots)
At 25,000 feet	414 mph	(359 knots)

M_{mo} (Alternate) = 0.906 at 27,900 feet and aboveV_a (Maneuvering)

At Sea Level	278 mph	(241 knots)
At 5,000 feet	279 mph	(242 knots)
At 10,000 feet	280 mph	(243 knots)
At 15,000 feet	283 mph	(245 knots)
At 20,000 feet	284 mph	(246 knots)
At 25,000 feet	289 mph	(251 knots)
At 30,000 feet	296 mph	(257 knots)
At 35,000 feet	304 mph	(264 knots)
At 40,750 feet	316 mph	(274 knots)

M_a = 0.906 at 40,750 feet and aboveV_{fe} (Flap Speeds) (Flaps not to be extended above 20,000 feet)

Maximum Flap Deflection	MPH	KTS
20°	254	220
30°	242	210
50°	213	185

V_{lo} (Landing Gear Operation)

Sea Level to 30,000 feet	311 mph	(270 knots)
30,000 to 36,000 feet	323 mph	(280 knots)

M_{lo} = 0.83 at 36,000 feet and aboveV_{le} (Landing Gear Extended)

Sea Level to 29,800 feet	328 mph	(285 knots)
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M_{le} = 0.83 at 29,800 feet and above

For Emergency Descent Only		
Vlo =	369 mph	(320 knots)
Mlo = 0.90		
Vle =	292 mph	(340 knots)
Vle = 0.90		
Dump CHute Operation		
At Sea Level to 42,000 feet	277 mph	(240 knots)
Dump Chute Extended		
At Sea Level to 36,600 feet	317 mph	(275 knots)
M = 0.83 at 36,600 feet and above		
Vmc (Minimum Control Speed)		
Vmca (Minimum Control Speed)(Air)	115 mph	(100 knots)
Maximum takeoff thrust		
Vmcg (Minimum Control Speed)(Ground)	115 mph	(100 knots)
Maximum takeoff thrust		

C.G. range and Datum

The nose gear retraction moment is 18,600 in./lb. for Model 720-025; and 14,500 in./lb. for the other 720 Models, and causes the C.G. to move forward. The main gear retracts parallel to the wing reference axis; hence, has no effect on the airplane C.G.

All stations noted in the Data Sheet are Body Stations unless identified specifically as moment arms. Drawing 69-10819, defines body stations and moment arms. For weight and balance purposes, datum is 70 in. forward of nose (Moment Arm 0). Horizontal distance of datum to average wing jack point is 810.5 in.

<u>Gross Weight</u>	<u>Forward Limit</u>	<u>Aft Limit</u>
<u>Model 720-022</u>		
213,000 lb.	18.0% MAC (Sta. 829.7)	29.5% MAC (Sta. 857.6)
203,000 lb.	16.6% MAC (Sta. 826.4)	31.0% MAC (Sta. 861.2)
190,000 lb.	15.0% MAC (Sta. 822.5)	31.0% MAC (Sta. 861.2)
<u>Model 720-025</u>		
230,000 lb.	18.4% MAC (Sta. 830.8)	26.0% MAC (Sta. 843.1)
225,000 lb.	17.8% MAC (Sta. 829.3)	31.0% MAC (Sta. 861.2)
200,000 lb.	15.0% MAC (Sta. 822.5)	31.0% MAC (Sta. 861.2)
150,000 lb.	15.0% MAC (Sta. 822.5)	31.0% MAC (Sta. 861.2)
130,000 lb.	15.0% MAC (Sta. 822.5)	30.0% MAC (Sta. 858.8)
<u>Model 720-027</u> (Serial No. 18066 only)		
203,000 lb.	17.0% MAC (Sta. 827.3)	31.0% MAC (Sta. 861.2)
190,000 lb.	15.0% MAC (Sta. 822.5)	31.0% MAC (Sta. 861.2)
<u>Model 720-027</u>		
218,500 lb.	17.1% MAC (Sta. 827.5)	27.3% MAC (Sta. 852.2)
215,000 lb.	16.7% MAC (Sta. 826.6)	31.0% MAC (Sta. 861.2)
200,000 lb.	15.0% MAC (Sta. 822.5)	31.0% MAC (Sta. 861.2)
<u>Model 720-048</u>		
230,000 lb.	18.4% MAC (Sta. 830.8)	26.0% MAC (Sta. 849.1)
225,000 lb.	17.8% MAC (Sta. 829.3)	31.0% MAC (Sta. 861.2)
200,000 lb.	15.0% MAC (Sta. 822.5)	31.0% MAC (Sta. 861.2)

Model 720-062

214,000 lb.	16.6% MAC (Sta. 826.4)	31.0% MAC (Sta. 861.2)
213,000 lb.	16.5% MAC (Sta. 826.1)	31.0% MAC (Sta. 861.2)
199,000 lb.	15.0% MAC (Sta. 822.5)	31.0% MAC (Sta. 861.2)
175,000 lb.	15.0% MAC (Sta. 822.5)	31.0% MAC (Sta. 861.2)

Straight line variation between values shown.

Maximum weights	720-022	720-027 *	720-048	720-025
	<u>720-062</u>			
Maximum ramp weight	213,000	218,500	230,000	230,000
Maximum inflight weight	213,000	218,500	229,000	229,000
Maximum flight weight at start of outboard reserve fuel transfer with zero fuel weight of 139,000 lbs.	190,000	190,000	190,000	190,000
Maximum flight weight at start of outboard reserve fuel transfer with zero fuel weight of 149,000 lbs. (See NOTE 13)	185,000	185,000	185,000	185,000
Maximum flight weight at which the outboard reserve tanks can be empty with zero fuel weight of 139,000 lbs.	185,000	185,000	185,000	185,000
Maximum flight weight at which the outboard reserve tanks can be empty with zero fuel weight of 149,000 lbs. (See NOTE 13)	180,000	180,000	180,000	180,000
Maximum landing weight	175,000	175,000	175,000	175,000
Maximum Zero Fuel Weight (See NOTE 13)	149,000	149,000	149,000	149,000
Alternate Zero Fuel Weight (See NOTE 5)	142,000	---	---	---

* (See NOTE 15)

Maximum baggage

Compartment	Body Sta	Maximum Load	Maximum Concentration	Capacity	Moment Arms
Fwd. Belly	400-600H+6	47 lb/in.	150 lb/ft ²	11,560 lb.	463 in.
Aft Belly	960-1060	50 lb/in.	150 lb/ft ²	3,000 lb.	990 in.
Aft Belly	1060-1200	35 lb/in.	150 lb/ft ²	4,900 lb.	1090 in.
Aft Belly	1200-1300	20 lb/in.	150 lb/ft ²	2,000 lb.	1210 in.

Fuel capacity

(See NOTE 1(c) for information relative to unusable fuel; NOTE 1(e) for required fuel usage procedure, NOTE 1(f) for undumpable fuel.)

The following data is given for full fuel tanks. See Boeing Documents indicated below for other fuel C.G. locations with partially filled tanks.

<u>Model</u>	<u>Document</u>
720-022	D6-5218
720-025	D6-7441
720-027	D6-5989
720-048	D6-5612
720-062	D6-8075

TANK Tanks Loaded	NOMINAL CAPACITY (Usable fuel in tank)		MAXIMUM CAPACITY	
	<u>U.S. Gallons per Tank</u>		Pounds	Moment Arm
	Overwing Fueling	Underwing Fueling		
<u>Model 720-022</u>				
No. 1 and No. 4 Reserve	444	430	3,081	1083.6
No. 1 and No. 4 Main	2,342	2,318	16,592	916.8
No. 2 and No. 3 Main	2,269	2,265	16,152	791.3
Center	<u>3,450</u>	<u>3,464</u>	<u>24,490</u>	739.5
Total	13,560	13,490	96,140	
<u>Model 720-027</u>				
No. 1 and No. 4 Reserve	444	444	2,995	1083.6
No. 1 and No. 4 Main	2,342	2,342	16,132	916.1
No. 2 and No. 3 Main	2,269	2,269	15,704	791.3
Center	<u>1,740</u>	<u>1,749</u>	<u>12,006</u>	737.1
Total	11,850	11,859	81,668	
<u>Model 720-025, 720-048 and 720-062</u>				
No. 1 and No. 4 Reserve	444	444	3,081	1083.6
No. 1 and No. 4 Main	2,342	2,342	16,592	916.8
No. 2 and No. 3 Main	2,269	2,269	16,152	791.3
Center	<u>3,450</u>	<u>3,464</u>	<u>24,490</u>	739.5
Total	13,560	13,574	96,140	

Oil capacity

Engine Oil			
Tank No.	Location	Volume Capacity	Moment Arm
1	Outboard Port	6.5 gallons	868.8
2	Inboard Port	6.5 gallons	686.1
3	Inboard Starboard	6.1 gallons	686.1
4	Outboard Starboard	6.1 gallons	868.9
The system oil capacities are given in Weight and Balance Control Manuals as noted under "Fuel Capacity."			

II - 720B Series (Transport Aircraft), Approved March 3, 1961

(Same as 720 Series, except for engines and other associated changes and limitations.)

The 720B Series airplane has several different models due to different installations of equipment, interiors, airplane flight manuals, etc. These models are as follows:

<u>Model</u>	<u>Serial numbers Eligible</u>																									
720-023B	18013 thru 18037																									
720-024B	18416 thru 18419, 18587; 18763; 19002 AND 19003																									
720-030B	18248 thru 18251; 18057 thru 18060																									
720-040B	18378 thru 18380 and 18745																									
720-047B	18061 thru 18063; 18167; 18451 thru 18453; 18588 thru 18590; 18749; 18818; 18820, 18827 thru 18830; 18963; 19160, 19161; 19207; 19208; 19413; 19414; 19438; 19439 and 19523																									
720-051B	18381 thru 18384; 18420 thru 18422; 18687 and 18688; 18351 thru 18356; 18792 and 18793																									
720-058B	18424 and 18425																									
720-059B	18086; 18087; and 18831																									
720-060B	18454; 18455; and 18977																									
720-068B	18165 and 18166																									
Engines	4 Pratt and Whitney JT3D-1, JT3D-1-MC6 or JT3D-1-MC7. See NOTE 11 for intermixing of engines.																									
Fuel	See NOTE 10.																									
Engine limits																										
	CERTIFICATION LIMITS																									
	<table border="0"> <thead> <tr> <th style="text-align: left;"><u>Thrust Ratings (pounds)</u></th> <th style="text-align: center;"><u>JT3D-1</u></th> <th style="text-align: center;"><u>JT3D-3</u></th> </tr> </thead> <tbody> <tr> <td>Takeoff (standard day) static</td> <td></td> <td></td> </tr> <tr> <td> Sea Level (5 minutes)</td> <td style="text-align: center;">17,000</td> <td style="text-align: center;">18,000</td> </tr> <tr> <td>Maximum continuous, standard day, static,</td> <td></td> <td></td> </tr> <tr> <td> Sea Level</td> <td style="text-align: center;">14,500</td> <td style="text-align: center;">16,400</td> </tr> </tbody> </table>	<u>Thrust Ratings (pounds)</u>	<u>JT3D-1</u>	<u>JT3D-3</u>	Takeoff (standard day) static			Sea Level (5 minutes)	17,000	18,000	Maximum continuous, standard day, static,			Sea Level	14,500	16,400										
<u>Thrust Ratings (pounds)</u>	<u>JT3D-1</u>	<u>JT3D-3</u>																								
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Sea Level (5 minutes)	17,000	18,000																								
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Sea Level	14,500	16,400																								
	Thrust setting -- appropriate thrust setting curve (EPR), in the Airplane Flight Manual must be used for control of engine thrust.																									
	Maximum permissible rotor operating speeds:																									
	<table border="0"> <tbody> <tr> <td>Low pressure compressor</td> <td>(N₁) rpm</td> <td style="text-align: center;">6800</td> <td style="text-align: center;">(109.9%)</td> <td style="text-align: center;">6800</td> <td style="text-align: center;">(109.9%)</td> </tr> <tr> <td>High pressure compressor</td> <td>(N₂) rpm</td> <td style="text-align: center;">10200</td> <td style="text-align: center;">(105.6%)</td> <td style="text-align: center;">10250</td> <td style="text-align: center;">(106.2%)</td> </tr> </tbody> </table>	Low pressure compressor	(N ₁) rpm	6800	(109.9%)	6800	(109.9%)	High pressure compressor	(N ₂) rpm	10200	(105.6%)	10250	(106.2%)													
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High pressure compressor	(N ₂) rpm	10200	(105.6%)	10250	(106.2%)																					
	Maximum permissible turbine outlet gas temperatures:																									
	<table border="0"> <tbody> <tr> <td>Takeoff (5 minutes)</td> <td style="text-align: center;">(530°C)</td> <td style="text-align: center;">985°F</td> <td style="text-align: center;">(555°C)</td> <td style="text-align: center;">1031°F</td> </tr> <tr> <td>Maximum continuous</td> <td style="text-align: center;">(460°C)</td> <td style="text-align: center;">860°F</td> <td style="text-align: center;">(490°C)</td> <td style="text-align: center;">914°F</td> </tr> <tr> <td>Maximum for acceleration</td> <td style="text-align: center;">(530°C)</td> <td style="text-align: center;">985°F</td> <td style="text-align: center;">(555°C)</td> <td style="text-align: center;">1031°F</td> </tr> <tr> <td> (2 minutes)</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Starting</td> <td style="text-align: center;">(450°C)</td> <td style="text-align: center;">842°F</td> <td style="text-align: center;">(450°C)</td> <td style="text-align: center;">842°F</td> </tr> </tbody> </table>	Takeoff (5 minutes)	(530°C)	985°F	(555°C)	1031°F	Maximum continuous	(460°C)	860°F	(490°C)	914°F	Maximum for acceleration	(530°C)	985°F	(555°C)	1031°F	(2 minutes)					Starting	(450°C)	842°F	(450°C)	842°F
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Starting	(450°C)	842°F	(450°C)	842°F																						
	Maximum permissible oil inlet temperatures:																									
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Continuous Operation	(132°C)	270°F	(132°C)	270°F																						
10 minutes operation	(143°C)	290°F	(143°C)	290°F																						

Airspeed limits (IAS)	V _{mo} (Normal Operating)		
	At Sea Level	436 mph	(378 knots)
	At 6,000 feet	439 mph	(381 knots)
	At 10,200 feet	442 mph	(384 knots)
	At 23,300 feet	459 mph	(399 knots)
	M _{mo} = 0.90 at 23,300 feet and above		
	V _a (Maneuvering)		
	At Sea Level	277 mph	(241 knots)
	At 5,000 feet	279 mph	(242 knots)
	At 10,000 feet	280 mph	(243 knots)
	At 15,000 feet	281 mph	(244 knots)
	At 20,000 feet	283 mph	(246 knots)
	At 25,000 feet	289 mph	(251 knots)
	At 30,000 feet	296 mph	(257 knots)
	At 35,000 feet	305 mph	(265 knots)
	At 40,600 feet	316 mph	(274 knots)
	M _a = 0.90 at 40,600 feet and above		
	V _{fe} (Flap Speeds) (Flaps not to be extended above 20,000 feet)		
	<u>Maximum</u>		
	<u>Flap Deflection</u>	<u>MPH</u>	<u>KTS</u>
	20°	253	220
	30°	242	210
	50°	213	185
	V _{lo} (Landing Gear Operation)		
	Sea Level to 30,000 feet	311 mph	(270 knots)
	30,000 to 35,900 feet	322 mph	(280 knots)
	M _{lo} = 0.83 at 35,900 feet and above		
	V _{le} (Landing Gear Extended)		
	Sea Level to 29,900 feet	369 mph	(320 knots)
	M _{le} = 0.83 at 29,900 feet and above		
	For Emergency Descent Only		
	V _{lo} =	369 mph	(320 knots)
	M _{lo} = 0.90		
	V _{le} =	392 mph	(340 knots)
	M _{le} = 0.90		
	Dump Chute Operation		
	At Sea Level to 42,000 feet	276 mph	(240 knots)
	Dump Chute Extended		
	At Sea Level to 36,700 feet	317 mph	(275 knots)
	M = 0.83 at 36,700 feet and above		
	V _{mc} (Minimum Control Speed)		
	V _{mca} (Minimum Control Speed)(Air)	134 mph	(116 knots)
	(For Model 720-058B only):	136 mph	(117.8 knots)
	Maximum takeoff thrust		
	V _{mcg} (Minimum Control Speed)(Ground)	128 mph	(111 knots)
	(For Model 720-058B only):	130 mph	(112.5 knots)

C.G. range and Datum

The nose gear retraction moment is 14,500 in/lb. and moves C.G. forward. The main gear retracts parallel to the wing reference axis; hence, has no effect on the airplane C.G.

All stations noted in the Data Sheet are Body Stations unless identified specifically as moment arms. For weight and balance purposes, datum is 70 inches forward of nose (Moment Arm 0). Horizontal distance of datum to average wing jack point is 810.5 inches.

<u>Gross Weight</u>	<u>Forward Limit</u>	<u>Aft Limit</u>
<u>Model 720-023B</u> (See Note 14)		
222,000 lb.	17.5% MAC (Sta. 828.5)	26.0% MAC (Sta. 849.1)
217,000 lb.	16.9% MAC (Sta. 827.1)	31.0% MAC (Sta. 861.2)
200,000 lb.	15.0% MAC (Sta. 822.5)	31.0% MAC (Sta. 861.2)
<u>Model 720-030B, 720-047B, 720-024B, and 720-023B</u>		
230,000 lb.	17.5% MAC (Sta. 828.5)	26.0% MAC (Sta. 849.1)
225,000 lb.	16.5% MAC (Sta. 825.1)	31.0% MAC (Sta. 861.2)
217,000 lb.	15.0% MAC (Sta. 822.5)	31.0% MAC (Sta. 861.2)
<u>Model 720-060B, 720-058B, 720-051B, 720-059B, 720-040B, 720-068B, 720-030B</u> (See Note 12)		
235,000 lb.	17.5% MAC (Sta. 828.5)	23.0% MAC (Sta. 841.8)
225,000 lb.	16.1% MAC (Sta. 825.1)	31.0% MAC (Sta. 861.2)
217,000 lb.	15.0% MAC (Sta. 822.5)	31.0% MAC (Sta. 861.2)

At lightweight aft C.G. locations, pitch up tendency after brake release could result in aircraft rotating onto tail. To prevent this, the noted aft C.G. locations should be observed when taking off at weights equal to or less than those noted below.

<u>Gross Weight</u>	<u>Forward Limit</u>	<u>Aft Limit</u>
<u>Model 720-023B</u> (See Note 14)		
<u>Models 720-030B, 720-047B, 720-051B, 720-059B, 720-040B, and 720-068B</u>		
179,000 lb.	17.5% MAC (Sta. 828.5)	26.0% MAC (Sta. 849.1)
135,000 lb.	16.9% MAC (Sta. 827.1)	31.0% MAC (Sta. 861.2)
200,000 lb.	15.0% MAC (Sta. 822.5)	31.0% MAC (Sta. 861.2)
<u>Model 720-030B, 720-047B, 720-024B, and 720-023B</u>		
230,000 lb.	17.5% MAC (Sta. 828.5)	26.0% MAC (Sta. 849.1)
225,000 lb.	16.5% MAC (Sta. 825.1)	31.0% MAC (Sta. 861.2)
217,000 lb.	15.0% MAC (Sta. 822.5)	31.0% MAC (Sta. 861.2)
<u>Model 720-060B, 720-058B, 720-051B, 720-059B, 720-040B, 720-068B, 720-030B</u> (See Note 12)		
235,000 lb.	17.5% MAC (Sta. 828.5)	23.0% MAC (Sta. 841.8)
225,000 lb.	16.1% MAC (Sta. 825.1)	31.0% MAC (Sta. 861.2)
217,000 lb.	15.0% MAC (Sta. 822.5)	31.0% MAC (Sta. 861.2)

Straight line variation between values shown.

Maximum weights

	720,023B*	720-023B, 720-024B, 720-030B, 720-047B**	720-0308*** 720-040B, 720-047B**** 720-051B, 720-058B 720-059B, 720-060B, 720-068B
Maximum ramp weight	222,000 lb.	230,000 lb.	235,000 lb.
Maximum flight weight, 30° Flaps	222,000 lb.	229,000 lb.	234,000 lb.
Maximum flight weight Zero Flaps	221,000 lb.	228,000 lb.	233,000 lb.
Maximum flight weight at start of outboard reserve fuel transfer	190,000 lb.	190,000 lb.	190,000 lb.
Maximum flight weight at which the outboard reserve tanks can be empty	185,000 lb.	185,000 lb.	185,000 lb.
Maximum landing weight	175,000 lb.	175,000 lb.	175,000 lb.
Maximum zero fuel weight	147,000 lb.	149,000 lb.	156,000 lb.

* See Note 14.

** See Note 6.

*** See Note 12.

**** See Note 16 and 17.

Maximum baggage

Compartment	Body Sta.	Maximum Load	Maximum Concentration	Capacity	Moment Arms
Fwd. Belly	400-600H+6	47 lb/in.	150 lb/ft ²	11,560 lb.	463 in.
Aft Belly	960-1060	50 lb/in.	150 lb/ft ²	3,000 lb.	990 in.
Aft Belly	1060-1200	35 lb/in.	150 lb/ft ²	4,900 lb.	1090 in.
Aft Belly	1200-1300	20 lb/in.	150 lb/ft ²	2,000 lb.	1210 in.

Fuel capacity

(See NOTE 1(c) for information relative to unusable fuel; NOTE 1(e) for required fuel usage procedure; NOTE 1(f) for undumpable fuel.)

The following data are given for full fuel tanks. See Boeing Documents indicated below for other fuel C.G. locations with partially filled tanks.

<u>Model</u>	<u>Document</u>
720-023B	D6-5400 (Sec. 2b.)
720-024B	D6-8074
720-030B	D6-5857
720-040B	D6-7835
720-047B	D6-5858
720-051B	D6-7367
720-058B	D6-8073
720-059B	D6-7239
720-060B	D6-7237
720-068B	D6-7834

TANK	NOMINAL CAPACITY (Usable fuel in tank)		MAXIMUM CAPACITY	
	U.S. Gallons per Tank		Pounds	Moment Arm
	Tanks Loaded	Overwing Fueling		
<u>Model 720-023B</u>				
No. 1 and No. 4 Reserve	444	430	3,081	1082.6
No. 1 and No. 4 Main	2,322	2,348	6,592	916.1
No. 2 and No. 3 Main	2,269	2,265	16,152	791.3
Center	<u>3,450</u>	<u>3,464</u>	<u>24,490</u>	739.5
Total	13,620	13,550	96,140	
<u>Model 720-024B, 720-030B, 720-047B, 720-051B, 720-058B, 720-060B and 720-068B</u>				
No. 1 and No. 4 Reserve	444	444	3,081	1083.6
No. 1 and No. 4 Main	2,342	2,342	16,592	916.1
No. 2 and No. 3 Main	2,269	2,269	16,152	791.3
Center	<u>4,720</u>	<u>4,741</u>	<u>33,412</u>	750.6
Total	14,830	14,851	105,062	
<u>Model 720-040B and 720-059B</u>				
No. 1 and No. 4 Reserve	444	444	3,081	1083.6
No. 1 and No. 4 Main	2,342	2,342	16,592	916.8
No. 2 and No. 3 Main	2,269	2,269	16,152	791.3
Center	<u>5,945</u>	<u>5,967</u>	<u>42,314</u>	731.7
Total	16,055	16,077	113,966	

Engine Oil			
Tank No.	Location	Volume Capacity	Moment Arm
1	Outboard Port	6.2 gallons	866.9
2	Inboard Port	6.2 gallons	684.1
3	Inboard Starboard	6.4 gallons	684.1
4	Outboard Starboard	6.4 gallons	866.9
The system oil capacities are given in Weight and Balance Control Manuals as noted under "Fuel Capacity."			

Specifications Pertinent to Both Series

MAC	241.9 inches. (L.E. of MAC is Body Station 786.2)
Leveling means	A plumb-bob attachment and leveling provision scale are provided in left wheel well.
Minimum crew	For all flights: 3 persons: Pilot, Copilot, Flight Engineer.
Maximum passengers	139. When inflatable escape chutes are installed per FAA approved type design data, airplane is limited to 140 passengers by emergency exit requirement of 4b.362(d). All 720 and 720B Series aircraft certificated to carry 141 - 149 passengers, except Model 720-025, must have the provisions of Boeing Service Bulletin 2045A installed to be in accordance with approved type design data. For Model 720-025, maximum passengers limited to 165. The installation of interior per Boeing Drawing 65-77197 allows a maximum passenger capacity of 170 for Model 720-025.

Maximum operating altitude	The maximum operating altitude for all Models is 42,000 feet:																										
Other operating Limitations	See FAA Approved Flight Manuals.																										
Control surface movements	To insure proper operation of the airplane, the movement of the various control surfaces must be carefully controlled by proper rigging of the flight control systems. The airplane must, therefore, be rigged in accordance with the following FAA approved data:																										
	<table border="0" style="width: 100%;"> <thead> <tr> <th style="text-align: left;"><u>Surfaces</u></th> <th style="text-align: left;"><u>Installation Drawing</u></th> </tr> </thead> <tbody> <tr> <td>Aileron and Spoiler</td> <td>50-8701</td> </tr> <tr> <td>Aileron Trim</td> <td>50-8705</td> </tr> <tr> <td style="padding-left: 20px;">Inboard Aileron Balance Panel tolerances</td> <td>50-73133</td> </tr> <tr> <td style="padding-left: 20px;">Outboard Aileron Balance Panel Tolerances</td> <td>50-73134</td> </tr> <tr> <td>Speed Brakes (Spoilers)</td> <td>50-8716</td> </tr> <tr> <td>Elevator</td> <td>50-8702</td> </tr> <tr> <td>Elevator Balance Panel Tolerances</td> <td>50-8424</td> </tr> <tr> <td>Stabilizer Trim</td> <td>50-8704</td> </tr> <tr> <td>Rudder</td> <td>50-8703</td> </tr> <tr> <td>Rudder Trim</td> <td>50-8706</td> </tr> <tr> <td style="padding-left: 20px;">Rudder Balance Panel Tolerances</td> <td>50-14035</td> </tr> <tr> <td>Wing Flap</td> <td>50-8707</td> </tr> </tbody> </table>	<u>Surfaces</u>	<u>Installation Drawing</u>	Aileron and Spoiler	50-8701	Aileron Trim	50-8705	Inboard Aileron Balance Panel tolerances	50-73133	Outboard Aileron Balance Panel Tolerances	50-73134	Speed Brakes (Spoilers)	50-8716	Elevator	50-8702	Elevator Balance Panel Tolerances	50-8424	Stabilizer Trim	50-8704	Rudder	50-8703	Rudder Trim	50-8706	Rudder Balance Panel Tolerances	50-14035	Wing Flap	50-8707
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Service information	Boeing Report D6-1891, Structural Repair Manual, is FAA approved. Service Bulletins, D6-1647, and other service information, when FAA approved, will carry a statement to that effect.																										
Certification basis	<p>CAR 4b, dated December 1953; Amendments 4b-1 thru 4b-6 thereto; Item 2 of Special Civil Regulation No. SR-422B; the special condition and the provisions of amendments listed in Attachment A of FAA letter to Boeing dated October 12, 1959.</p> <p>Type Certificate No. 4A28 issued June 30, 1960.</p> <p>Date of Application for Type Certificate - April 12, 1957.</p> <p>Compliance with the following optional requirements has been established:</p> <p style="padding-left: 40px;">Ditching Provisions of 4b.361</p> <p style="padding-left: 40px;">Ice Protection Provisions of 4b.640</p>																										
Production basis	Production Certificate No. 700.																										
Equipment	<p>The basic required equipment as prescribed in the applicable Airworthiness Regulations (see Certification Basis) must be installed in the aircraft for certification. The following Boeing Documents list all required equipment that must be installed as well as optional equipment approved by FAA.</p>																										

720 Series

<u>Model</u>	<u>Document</u>
720-022	D6-5218
720-025	D6-7441
720-027	D6-5989, D6-7014
720-048	D6-5612
720-062	D6-8075

<u>720B Series</u>	<u>Document</u>
<u>Model</u>	
720-023B	D6-5400 (Sec. 2b)
720-024B	D6-8074
720-030B	D6-5857
720-040B	D6-7835
720-047B	D6-5858
720-051B	D6-7367
720-058B	D6-8073
720-059B	D6-7239
720-060B	D6-7237
720-068B	D6-7834

- NOTE 1. (a) Current weight and balance report including list of equipment included in certificated empty weight, and loading instructions must be in each aircraft at the time of original certification and at all times thereafter except in the case of operators having an approved weight control system.
- (b) The airplane must be loaded so that the C.G. is within the specified limits (See C.G. Range) at all times with the effects of fuel use and movement of crew and passengers from their assigned positions being considered.
- (c) The "drainable unusable fuel" is that amount of fuel in the tanks which is unavailable to the engines and under critical flight conditions as defined in CAR 4b.416. This drainable unusable fuel does not include the "tank trapped fuel" or "line unusable fuel," which is the unusable fuel retained in the fuel lines. The "total unusable fuel," which includes the drainable unusable fuel, tank trapped fuel and line unusable fuel, must be included in the airplane empty weight or be suitably accounted for in the airplane weight and balance report. The total amount of unusable fuel for all 720 and 720B Series aircraft is as follows:
- (d) "System oil" is defined as that amount of oil required to fill the oil system and tank outlets to the engines. System oil and all hydraulic fluid must be included in the airplane empty weight or be suitably accounted for in the airplane weight and balance report. See appropriate Boeing document listed under "Equipment."
- (e) To preserve favorable wing bending moments, the following limitations shall apply:
- All center tank fuel in excess of any included in the zero fuel weight must be used before the transfer of reserve tank fuel. For 720 Series aircraft with 149,000 lbs. zero fuel weight, the outboard reserve tanks must be filled when the airplane gross weight exceeds 180,000 lb. and transfer of reserve tank fuel must not be initiated above gross weights of 185,000 lb. In all other cases for 720 Series aircraft and for 720B Series aircraft, the outboard reserve tanks must be filled when the gross weight exceeds 185,000 lbs. and transfer of reserve fuel must not be initiated above gross weights of 190,000 lbs.
- (1) Fuel Loading Limitations
- Load fuel equally in main tanks 1, 2, 3 and 4 up to a total capacity of 36,000 lbs. (for 720B Series and for 720 Series aircraft utilizing a zero fuel weight of 149,000 lbs.); 43,000 lbs. (for 720 Series aircraft utilizing 139,000 lbs. for zero fuel weight); 29,000 lbs. for 720B Series aircraft utilizing the 156,000 lbs. zero fuel weight).
 - If additional fuel is desired, load reserve tank.
 - If the reserve tanks are full and additional fuel is required, continue loading fuel equally in main tanks 1, 2, 3, and 4.

- d. If main tanks 2 and 3 are full and additional fuel is required, continue to load main tanks 1 and 4 to required fuel quantity.
- e. If all main and reserve tanks are full and additional fuel is required, load center tank fuel.

OPTION: Fuel must be loaded equally in the main tanks only up to a gross weight of 185,000 lbs. or 180,000 lbs. for 720 series aircraft utilizing the 149,000 lbs. zero fuel weight. Additional required fuel must be added first to the reserve tanks and when full, then equally to the main tanks and when full, then to the center tank.

NOTE: Observing limitations above, center tank fuel may be substituted for payload in any quantity up to the maximum allowable payload * or to the center tank capacity, whichever is lower, provided the difference in effect on balance is also accounted for.

* Maximum zero fuel weight less operating weight empty.

NOTE: Tanks selected for flight may be loaded simultaneously.

(2) Fuel Usage Limitations

Use tank-to-engine combination during all takeoffs and landing except as noted under Minimum Fuel Go-Around. (See Airplane Flight Manual.)

The fuel in main tanks 1, 2, 3, and 4 must be used equally at airplane gross weights above 211,000 lbs. (Model 720B); 207,000 lbs. (Model 720).

Fuel reserves must be retained in main tanks only.

For 720B Series Only

Expend a minimum of 15,000 lbs. up to a maximum of 20,000 lbs. (total) of main tank fuel for initial takeoff and climb to altitude. (Not applicable to takeoff gross weights below 190,000 lbs.)

(f) Fuel Dumping -

All 720 and 720B Series

	<u>Undumpable Fuel</u>
Two Outboard Main Tanks	993.4 gallons
Two Inboard Main Tanks	622.8 gallons

NOTE 2. Reserved.

NOTE 3. Replacement brake lining must meet Boeing specification D10-60228, Revision C, "Specification for Wheel and Brake Assembly."

NOTE 4. Aft of Fuselage Station 980 the airplane design vertical load factors exceed TSO-C39 specifications; therefore, replacement passenger seats aft of Fuselage Station 980 must be evaluated for compliance with CAR 4b.358(c).

NOTE 5. Not applicable to Model 720-025. The alternate design condition (for the 720 Series only) differs from the basic condition in that a higher zero fuel weight was selected (142,000 lbs. maximum). Consequently, structure was substantiated at a reduced Vc speed (Vmo).

Therefore, it is necessary to reduce the Mmo speeds to the alternate Vmo speeds whenever the zero fuel weight is greater than 139,000 lbs., and outboard reserve tanks are less than full.

- NOTE 6. For 720-047B, Serial Nos. 18061, 18451 and higher. The zero fuel weight is increased to 156,000 pounds.
- NOTE 7. Special fatigue or retirement considerations applicable to the 720B Series aircraft:
- (a) The turbo compressor duct must be inspected, maintained, and/or retired in accordance with Boeing Service Bulletin No. 1221 dated February 23, 1962, or later FAA approved revisions.
 - (b) The engine nose cowling must be inspected, maintained, and/or retired in accordance with Boeing Service Bulletin No. 1219 dated February 22, 1961, or later FAA approved revisions.
- NOTE 8. For Model 720-059B only.
- If an airplane enters U.S. Registry with an Interior Arrangement installed in accordance with Boeing Service Bulletin No. 208Q, this Interior Arrangement must be inspected to determine compliance with the applicable regulations.
- NOTE 9. Reserved.
- NOTE 10. JP-1, JP-4, and JP-5 fuels conforming to P&WA Specification No. 522 and later revisions may be used separately or mixed in any proportions without adversely affecting the engine operation or power output. No fuel control adjustment is required when switching fuel types.
- Phillips anti-icing fuel additive PFA-55MB may be used if concentration delivered to airplane does not exceed 0.1% by volume. No fuel system anti-icing credit is allowed.
- Anti-static fuel additive (Shell ASA-3) may be mixed with the fuel (recommended quantity 0.5 to 1.0 ppm by weight) provided the effective conductivity of the mixture does not exceed 300 picomhos per meter.
- NOTE 11. (a) For 720B Series Airplanes
- This series aircraft may intermix the following engines in the combinations and with the appropriate limitations noted in the FAA Approved Airplane Flight Manual:
- Pratt and Whitney JT3D-1, JT3D-1MC6, JT3D-1MC7, JT3D-3, AND JT3D-3B engines
- (b) For 720-025 Series Airplanes
- This series aircraft may intermix the following engines in the combinations and with the appropriate limitations noted in the FAA Approved Airplane Flight Manual:
- Pratt and Whitney JT3C-7 and JT3C-12
- NOTE 12. For Model 720-030B only. Airplane Serial Nos. 18051, 18058, 18059 and 18060 are limited to a maximum gross weight of 230,000 pounds and must not exceed the limits noted for aircraft of that weight. Airplane Serial Nos. 18248, 18249, 18250 and 18251 are limited to a maximum gross weight of 235,000 pounds and must not exceed the limits noted for aircraft of this weight.
- NOTE 13. All 720 Series aircraft can utilize the 149,000 pounds zero fuel weight except Model 720-022, serial Nos. 17907 through 17917, which are limited to a zero fuel weight of 139,000 pounds or an alternate of 142,000 pounds.
- NOTE 14. For Model 720-023B, Serial Nos. 18013 through 18026 only. These aircraft are restricted to 222,000 pounds maximum ramp weight and all related weights. (Inboard wing structural reasons.)
- NOTE 15. For Model 720-027, Serial No. 18066 only. This aircraft is restricted to 203,000 pounds maximum ramp weight and 202,000 pounds maximum inflight weight.

NOTE 16. For Model 720-047B, Serial Numbers 18061, 19207, 19208, 19413, 19414, 19438, 19439 & 19523 only. These aircraft are limited to a maximum gross weight of 235,000 pounds and must not exceed the C.G. limit noted for aircraft of that weight.

NOTE 17. Except for NOTE 14 aircraft, Model 720/720B aircraft are approved for 185,000 pounds maximum landing weight with appropriate airspeed placard changes.

---END---